

Ethnobotanical study of *peraq api* ritual in Sasak Tribe of Lombok Island, Indonesia and its potential for sustainable tourism

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Abstract. *Rahayu SM, Batoro J, Sukenti K, Hakim L. 2023. Ethnobotanical study of peraq api ritual in Sasak Tribe of Lombok Island, Indonesia and its potential for sustainable tourism. Biodiversitas 24: 5485-5494. Peraq api* is a ritual for giving baby names by the Sasak Tribe in Lombok Island, Indonesia. This ritual uses various species of plants and processions to symbolize values and beliefs of the Sasak people. This unique cultural knowledge and practice might interest tourists to experience the ritual. This study aims to determine the diversity of plant species used in *peraq api* ritual and the ethnobotanical knowledge embedded on it, and to assess the potential of utilizing this ritual for sustainable tourism development. This research was conducted in villages around the Mandalika Area, including Sengkol, Kuta, Sukadana, and Mertak Villages, located in Pujut Sub-district, Central Lombok District, West Nusa Tenggara Province. The research was carried out by combining the methods of direct observation, participatory observation and interviews. Information on the species and vernacular names, plant part used, mode of use, conservation status of the plant as well as its habitat were collected and analyzed using descriptive and qualitative approaches. Based on the research, it was found that 15 families, 21 genera and 22 plant species were used in *peraq api* ritual. Each plant symbolizes the indigenous value and beliefs of Sasak Tribe related to their connection with God, people and environment. The use of plants in *peraq api* ritual also shows the indigenous intelligence of the Sasak Tribe. Traditional knowledge about the uses of plants and landscape management plays an important role in plant conservation. Plants used in the *peraq api* ritual can be found in various habitats, including homegarden, garden, riverside and ricefield. These various habitats resemble the indigenous ecological and ethnobotanical knowledge of Sasak Tribe in landscape management which has a very positive role in conserving biodiversity, creating a sustainable environment and socio-cultural preservation. The *peraq api* ritual has the potential to be developed as a sustainable tourism. The development of *peraq api* rituals for tourism might be useful to preserve cultural values of Sasak Tribe as a national cultural asset, conserve plant diversity and environment and improve the welfare of local communities.

Keywords: Cultural landscape, indigenous intelligence, plant diversity, traditional ceremony

INTRODUCTION

Culture is a complex system of human beliefs and behaviors that emerges from the interactions between people and their local environment. Culture can be expressed through behaviors, materials and people. The culture exhibits a sense of community encourages adjustments and serves the community's requirements through a way of living (He et al. 2021). Human life is fundamentally impacted by culture (Pasikowska-Schnass and Widuto 2022). One aspect of culture is manifested as traditional ceremonies which are carried out and passed down through the generations (Astina et al. 2021). Ceremonies in the traditions of every culture have distinctive characteristics (Akmal and Lubis 2022). In the religious system, rituals and ceremonies are human activities or actions performed to interact with and serve God, Gods, Ancestral Spirits, or other supernatural creatures. Rituals are activities deliberately carried out by a group of people based on trust and confidence for certain purposes. As identities, rituals

and ceremonies used tangible physical attributes (Wahyuni et al. 2023), which are often represented in various forms such as animals and plants.

Ethnobotany is the science to understand the relationship between humans and plants. The use of plants has become very important in human social and cultural development (Miller et al. 2019). Plants are objects that are often used in human activities, including in rituals. Throughout human civilization, plants cannot be separated from traditional rituals and ceremonies (Sutrisno et al. 2020). Using plants in sacred rituals and ceremonies is a unique practice that helps people connect to their environment and cultural history (Herrera et al. 2021).

Rituals have the potentials to developed as a tourist attraction as a type of cultural tourism (Singgalen et al. 2019; Gorda et al. 2023). Vitrianto and Patiyusuf (2022) stated that cultural tourism is activities aiming to see or enjoy archaeological sites, historical sites, museums, traditional ceremonies, religious ceremonies, performing arts, festivals, etc. In the last few decades, there has been

an increase in awareness and interest in cultural tourism activities (Andrade et al. 2021). Cultural tourism is important in preserving cultural values of a nation (Jurenienė and Radcevičius 2022). Ritual, as part of the traditions of a society, is also an important element in sustainable tourism development.

As a country with diverse cultures, Indonesia is rich in rituals which are different from one region from another (Singgalen et al. 2019; Gorda et al. 2023). One area with unique characteristic in term of culture is Lombok. This island is geographically situated in the Lesser Sunda Islands chains, located between Bali and Sumbawa. Administratively, Lombok is included in West Nusa Tenggara Province (Badan Pusat Statistik Provinsi Nusa Tenggara Barat 2023). The government of Indonesia has listed Mandalika Area in Lombok Island as one of the Special Economic Zone to promote and accelerate the development of the region, especially from the tourism sector (Pemerintah Republik Indonesia 2014). Mandalika Special Economic Zone is located in Pujut Sub-district, Central Lombok District, West Nusa Tenggara Province. The Mandalika special economic zone covers several villages inhabited by the Sasak Tribe, the native people of Lombok Island.

Similar with many communities across Indonesia which still adhere to rituals and ceremonies (Izzah et al. 2021), the Sasak Tribe also still maintain various ritual activities. One of such rituals is called *peraq api*, which is carried out when naming a child. This ritual is carried out after 7-9 days of the baby's age marked by the severing of the umbilical cord. *Peraq api* is performed as an expression of gratitude to God for the gift of life received. In implementing the *peraq api* ritual, several plant species are used. The ritual combined with the ethnobotanical knowledge in *peraq api* has the potential to be developed as a tourist attraction. In this regard, scientific studies regarding the *peraq api* ritual are needed to achieve sustainable tourism development, including data regarding the plants used in this ritual. Until now, there has been no study of the species of plants used in *peraq api* ritual and the potency of sustainable tourism development based on it. Therefore, this study aims to determine the diversity of plant species used in *peraq api* ritual and the ethnobotanical knowledge embedded on it, and to assess

the potential of utilizing this ritual for sustainable tourism development.

MATERIALS AND METHODS

Study area

Ecologically, Lombok is a tropical island that experiences seasonal drought (Brearley et al. 2019). This research was conducted in villages around Mandalika Area, including Sengkol, Kuta, Sukadana, and Mertak Villages, which are located in Pujut Sub-district, Central Lombok District, West Nusa Tenggara Province, Indonesia (Figure 1). Geographically, Pujut is in the southern part of Central Lombok District, a hilly area bordered by the Indian Ocean. As a special economic zone with focus on tourism, there are many marine tourist attractions in this area. However, the primary livelihood of the local people in the research area is farming.

Data collection procedures

This research combined the methods of direct observation, participatory observation and interviews (Cotton 1996; Martin 2007). Interviews with informants were based on the snowball method (Endraswara 2006), with informants serving as traditional leaders, community leaders and local people who understand *peraq api* ritual (Table 1). All informants were born and live in villages around Mandalika. The number of male and female informants was almost the same. Most of the informants were people at productive age who work as farmers in rainfed rice fields or gardens. Some informants were community leaders, for example village leaders, village office employees or hamlet leaders, and traditional healers called *belian* who assist in the birthing process and help the mother in caring for the baby after giving birth. Other informants were mothers who have given birth to babies and have carried out the *peraq api* ritual. Field observation was carried out to determine the habitat of the plants used in the *peraq api* ritual. Identification of plants refers to several identification books (Henderson 2009; Van Steenis 2013; Setyawati et al. 2015). The plant's scientific name is based on the International Plant Names Index (2023).

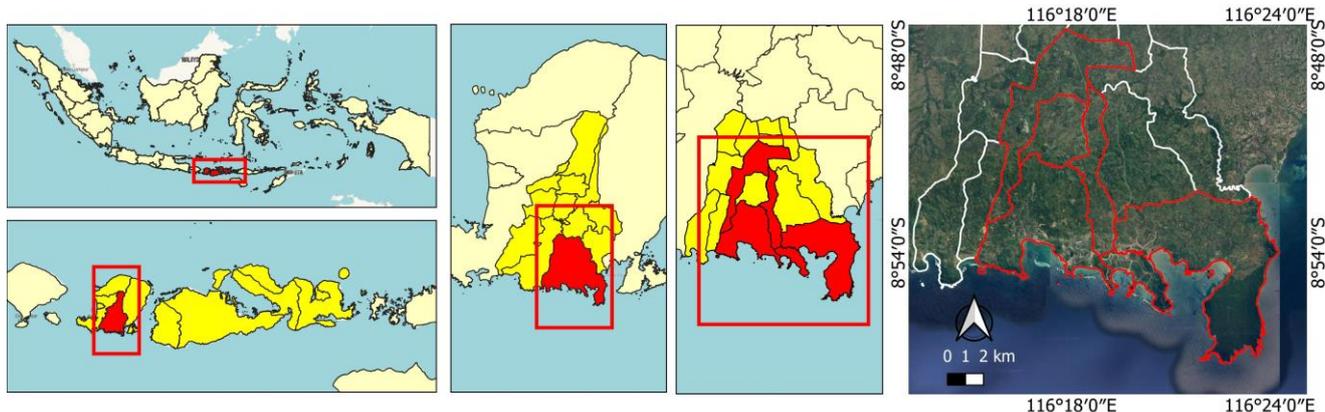


Figure 1. Map of the study area at four villages in Pujut Sub-district, Central Lombok District, West Nusa Tenggara Province, Indonesia

Table 1. The characteristics of informants in this study

Informant Category	Total	Percentage (%)
Sex		
Male	118	51%
Female	113	49%
Age		
17-30	63	27%
31-44	52	23%
45-60	86	37%
> 60	30	13%
Occupation		
Farmer	96	41%
Community Leader	22	10%
Traditional Leader (<i>Belian</i>)	44	19%
Housewife	69	30%

Data analysis

The plants that have been identified are then tabulated according to the family, vernacular name, conservation status, plant part used, use, and habitat. These various data were then analyzed using descriptive and qualitative approaches. Thus, the understanding on the ritual process, plant diversity and the potential for sustainable tourism development in *peraq api* ritual of Sasak Tribe on Lombok Island can be comprehensive.

RESULTS AND DISCUSSION

***Peraq api* ritual**

The Sasak people are Muslim and believe that life originates and is regulated by Allah (God in Islam). Therefore, the *peraq api* ritual is carried out to express gratitude to Allah. The traditional birth ceremony is a sacred event for the Sasak people. *Peraq api* is interpreted as a symbol of gratitude and a symbol of life that represents the element of human creation. *Peraq api* is a ritual passed down from generation to generation. This ritual aims to honor, worship, and ask God for salvation through spirits and ancestors.

In Sasak language, *peraq* means extinguishing, and *api* means fire, thus *peraq api* means extinguishing fire. The extinguished fire is special: a warming fire for a mother

who has just given birth. This fire is placed in a fireplace called *dapuh*. Approaching *peraq api*, the *dapuh* fire is brought out to be extinguished. The connection between *peraq api* and extinguishing fire in the *dapuh* is that the fire in mother room must be extinguished because a mother is allowed to go out. *Peraq api* is carried out after the umbilical cord is cut. According to the beliefs of the Sasak Tribe, this means that the relationship between the baby and the mother has been cut off from the mother's uterus so that a child must have a name to be able to interact with his environment. *Peraq api* is held at *nyepék peken* (peak market time) from 09.00 to 10.00 in the morning, conducted at the front of the house (terrace) and led by a *belian*.

In the procession, the *Peraq api* ritual requires preparation in the form of materials, the number of days of birth and other considerations. Materials must be fully prepared to free a baby from taboos in the future. Through the rituals that have been performed, the Sasak people believe that God and the spirits of the ancestors will help the baby from any danger that threatens him/her at any time. The materials used in *peraq api* ritual are shown in Figure 2.

In ritual activities, a plant species cannot be substituted with another (Koentjaraningkrat 2009). According to Iskandar and Iskandar (2017), the primary function of these plant species is related to symbolism. Through symbols, humans learn about and understand the world (Akimov and Kadyshcheva 2023). Various plant species are used in the *peraq api* ritual. In *peraq api* ritual, *moto seong* is prepared. *Moto seong* is rice that is roasted and mixed with grated coconut and sliced palm sugar, and then wrapped using leaves of *waru* (*Hibiscus tiliaceus*) and clamped with coconut leaf sticks. This *moto seong* is given to the people present during the ritual. *Moto seong* describes simplicity and gratitude to God and the hope that the baby will be able to behave sweetly in the future. *Sembeq* is a marker of self-unification with God, so babies are known by their communities because they already have names. Furthermore, hair of the baby and mother is given *kejames*, the hair oil made from coconut milk mixed with turmeric (*Curcuma longa*) and bathed until clean.



Figure 2. The materials used in *peraq api* ritual by Sasak Tribe in Lombok Island, Indonesia

Water symbolizes the elements in the human body and source of life. Various kinds of flowers are used as symbols so that the baby will later grow into a beautiful human (good person) like a flower, make the family proud and become the family's pride. This stage is carried out to clean the baby from physical and non-physical dirt. Physically means to clean the dirt that sticks to the baby's body, while non-physically means to clean the baby's soul. The water in the *kocor tanak* is poured out to extinguish the fire. *Kocor tanak* is earthenware made of clay to store water. The fire comes from *tangkil* (charcoal of *Cocos nucifera*) On the top of the *tangkil*, there are stems and leaves of *bikan* (*Coccinia grandis*), leaves of *bunut* (*Ficus benjamina*), and stems and leaves of *jonjok* (*Cardiospermum halicacabum*). These three plant species symbolize that the baby's life will be *seloloq* (healthy and safe), like these plants, which are always green and fresh wherever it grows. Fire symbolizes the anger and lust in humans that must be controlled and extinguished.

Then, the baby is placed on the *kleong* and *ta eyok* is performed, where the baby is rocked over the coals of the fire that has been extinguished. *Kleong* is made of woven bamboo that is usually used for cleaning rice, drying food, etc. The embers are the result of burning coconut fiber and charcoal. This stage is believed to be a process of introducing a baby to the world, symbolizing that there will be problems and challenges in life. The baby will grow and develop according to their time. Therefore, the baby will not be afraid to face various life problems and challenges. The people present at the ritual then do *nyeraup*, namely, wash their faces and eyes using water to extinguish the fire. This is believed so that their wish can be fulfilled, stay young, and prevent short-sightedness.

Next stage is naming the baby. The parents prepare more than one name written on a paper and the name is put on the baby's hand. People believe that the name that the baby likes the most is the paper that the baby grips most firmly. Then, *belian* gave *sembeq* to the baby's forehead, followed by saying the name on the paper tightly gripped by the baby's hand. *Sembeq* consists of *lekoq* leaves (*Piper betle*), *buah* fruit (*Areca catechu*), *sekoh* (*Kaempferia galanga*), and betel lime, which is chewed by a *belian*.

Every ritual activity of the Sasak people always has an *andang-andang*. This is a symbol of starting a job so that the results align with what was intended and a symbol of communication with the universe, which shows an attitude of maintaining harmony. The components of *Andang-andang* are rice, *buah* (*A. catechu* nut), *lekoq* (*Piper betel* leaf), betel lime, and yarn (one bunch). *Andang-andang* is a symbol of communication with the universe by surrendering to God. Rice is a symbol of willingness to share the blessings that God has given. Betel leaves, areca nut and betel lime for *sembeq* are symbols of the mixing of the father's sperm and the mother's ovum which giving birth to human life. The thread (yarn) symbolizes establishing friendship or brotherhood with fellow human beings.

Plant diversity used in *peraq api* ritual

Based on the research, it was found that 15 families, 21 genera, and 22 species of plants are used in the *peraq api* ritual, as shown in Table 2. This shows that various plant species are related to the community's socio-cultural activities. Therefore, these plants are commonly planted and can be found around the Sasak people's environment, namely: homegarden, garden, ricefield and riverside. Plant families with the highest number of species used in the *peraq api* ritual are Arecaceae and Apocynaceae (Figure 3).

Yao et al. (2023) stated that Arecaceae is a family with 181 genera and 2,600 plant species with great cultural and economic significance. Arecaceae is widely spread in tropical and subtropical regions, growing in wet, humid, and hot environments (Balslev et al. 2011). The *A. catechu*, *Arenga pinnata* and *C. nucifera* are three species in the Arecaceae family that are commonly used in various traditional ceremonies (Sutrisno et al. 2020; Rambey and Lubis 2022; Wakhidah et al. 2022; Ulfa et al. 2023). Apocynaceae is a family of trees, shrubs, and vines. Apocynaceae comprises 415 genera and 4,600 species (Islam and Lucky 2019). *Allamanda cathartica*, *Catharanthus roseus* and *Plumeria alba* are three species in the Apocynaceae family that are commonly used in various rituals (Dharmono et al. 2013; Rana et al. 2016; Darma et al. 2021; Ratnani et al. 2021).

The most widely used plant species in *peraq api* ritual is *C. nucifera* (coconut). Sobral et al. (2018) stated coconut is the most broadly established tree on the world. Coconut is a monocot plant belongs to Arecaceae family (Chakraborty and Mitra 2008). This plant can be found throughout the tropics, where it is entwined with local people lives. Coconut tree start to produce fruit after three years (Chan 2016). Its fruit is divided into three layers: outer layer (exocarp), middle layer (mesocarp) and the inner layer (endocarp) which wrap the endosperm (Chakraborty and Mitra 2008). The endosperm is divided into solid endosperm (coconut flesh) and liquid endosperm (coconut water) (Reddy and Lakshmi 2014). Coconut milk is a white, milky liquid extracted from old coconut flesh (Grumezescu and Holban 2019).

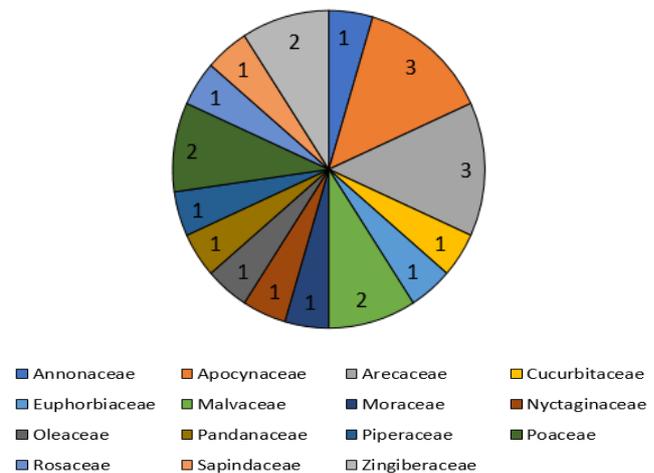


Figure 3. Number of species of each plant family used in *peraq api* ritual by Sasak Tribe in Lombok Island, Indonesia

Table 2. Plant species used in *peraq api* ritual by Sasak Tribe in Lombok Island, Indonesia

Family	Species	Vernacular Name	Conserv. Status	Part Used	Use	Habitat
Annonaceae	<i>Cananga odorata</i> (Lam.) Hook.f. & Thomson	<i>Kembang sandat</i>	LC	Fl	Material mixed with water for bathing the baby	Hg
Apocynaceae	<i>Allamanda cathartica</i> L.	<i>Alamanda</i>	NE	Fl	Material mixed with water for bathing the baby	Hg
	<i>Plumeria alba</i> L.	<i>Jepun</i>	LC	Fl	Material mixed with water for bathing the baby	Hg
	<i>Catharanthus roseus</i> (L.) G. Don	<i>Tapak dare</i>	NE	Fl	Material mixed with water for bathing the baby	Hg
Arecaceae	<i>Arenga pinnata</i> (Wurmb) Merr.	<i>Enao</i>	NE	Fl	Slices of palm sugar sprinkled on top of <i>moto seong</i>	Hg, Rs
	<i>Cocos nucifera</i> L.	<i>Nyiur</i>	NE	Fr	Grated coconut sprinkled on top of <i>moto seong</i>	Hg, G, Rf
				Fr	Coconut shell charcoal for making fire	
				Fr	Coconut milk as material for making <i>kejames</i>	
				L	Coconut leaf stick to clamp <i>waru</i> leaf of <i>moto seong</i> wrapping	
	<i>Areca catechu</i> L.	<i>Buaq</i>	DD	Fr	Material for making <i>Sembeq</i>	Hg, G
Cucurbitaceae	<i>Coccinia grandis</i> (L.) Voigt	<i>Bikan</i>	NE	L, St	Material mixed with water to extinguish the fire	Hg, G
Euphorbiaceae	<i>Euphorbia milii</i> Des Moul.	<i>Kembang mahkota dui</i>	LC	Fl	Material mixed with water for bathing the baby	Hg
Malvaceae	<i>Hibiscus rosa-sinensis</i> L.	<i>Kembang sepatu</i>	NE	Fl	Material mixed with water for bathing the baby	Hg
	<i>Hibiscus tiliaceus</i> L.	<i>Waru</i>	LC	L	<i>Moto seong</i> wrapping	Hg
Moraceae	<i>Ficus benjamina</i> L.	<i>Bunut</i>	LC	L	Material mixed with water to extinguish the fire	Hg
Nyctaginaceae	<i>Bougainvillea spectabilis</i> Willd.	<i>Kembang kertas</i>	NE	Fl	Material mixed with water for bathing the baby	Hg
Oleaceae	<i>Jasminum sambac</i> (L.) Aiton	<i>Melati</i>	NE	Fl	Material mixed with water for bathing the baby	Hg
Pandanaceae	<i>Pandanus amaryllifolius</i> Roxb.	<i>Pudak wangi</i>	NE	L	Material mixed with water for bathing the baby	Hg
Piperaceae	<i>Piper betle</i> L.	<i>Lekoq</i>	NE	L	Material for making <i>Sembeq</i>	Hg, G
Poaceae	<i>Bambusa vulgaris</i> Schrad.	<i>Treng aur</i>	NE	St	Material for making <i>kleong</i>	Hg, Rs
	<i>Oryza sativa</i> L.	<i>Pare</i>	NE	S	Material for making <i>moto seong</i>	Rf
					Component of the <i>Andang-andang</i>	
Rosaceae	<i>Rosa hybrida</i> L.	<i>Kembang mawar</i>	NE	Fl	Material mixed with water for bathing the baby	Hg
Sapindaceae	<i>Cardiospermum halicacabum</i> L.	<i>Jonjok</i>	LC	L, St	Material mixed with water to extinguish the fire	Hg, G, Rs
Zingiberaceae	<i>Curcuma longa</i> L.	<i>Kunyik</i>	DD	Rh	Material mixed with coconut cream for making <i>kejames</i>	Hg, G
	<i>Kaempferia galanga</i> L.	<i>Sekoh</i>	DD	Rh	Material for making <i>Sembeq</i>	Hg, G

Note: Conservation Status, NE: Not Evaluated, LC: Least Concern, DD: Data Deficient. Part used, Fl: Flower, Fr: Fruit, L: Leaf, Rh: Rhizome, S: Seeds, St: Stem. Habitat, Hg: Homegarden, G: Garden, Rf: Ricefield, Rs: Riverside

The use of coconut milk and *C. longa* in *kejames* (hair oil) is an example of the ancestor indigenous intelligence of the Sasak Tribe. Dumont (2005) stated that indigenous intelligence is the smart and responsible use of outstanding knowledge which is used in a good, beneficial and meaningful way. In *peraq api* ritual, coconut milk and *kunyik* (*C. longa*) are used as *kejames* ingredients. Damanik et al. (2020) stated coconut milk can clean hair and scalp from dandruff because it contains coconut oil. Coconut milk and *C. longa* extract effectively reduce hair loss and itchiness caused by fungi on the scalp (Mukti and Misbahuddin 2020). Coconut milk contains many vitamins (C, E, B1, B3, B5), iron, selenium, sodium, calcium, magnesium, phosphorus, stearic acid, and magnesium stearate. Lauric acid is a component contained in coconut milk that functions to strengthen the cuticle. Coconut milk contains high protein, which has the potential to strengthen hair. Natural fatty acids in coconut milk have moisturizing function so the scalp and hair are not dry and can repair hair damage. Coconut milk effectively reduces hair loss

and maintains healthy hair and scalp (Dhivya et al. 2022). Coconut milk is also a hair conditioner (Jayasekhar et al. 2019).

The community in the studied area uses *A. pinnata* flowers by processing them into palm sugar, locally known as *gule beak*. Palm sugar is sliced into small pieces and then sprinkled with grated coconut flesh over the *moto seong*. Coconut meat contains various nutrients including carbohydrates, proteins, lipids, crude fiber, vitamins, and minerals (Appaiah et al. 2014; USDA National Nutrient Database 2019). Palm sugar is a natural sweetener with a distinctive taste, color and aroma (Suharto and Kurnia 2022), so it is used in various traditional foods.

The water used for bathing in *peraq api* ritual has been mixed with various species of flowers, including *Jasminum sambac*, *P. alba*, *Cananga odorata*, *Euphorbia milii*, *Bougainvillea spectabilis*, *A. cathartica*, *Hibiscus rosa-sinensis*, *C. roseus* and *Rosa hybrida*. Besides various flowers, *Pandanus amaryllifolius* leaves are also mixed in the water. The *J. sambac* is a species in the Oleaceae

family used in various rituals (Sutrisno et al. 2020; Darma et al. 2021; Munawaroh and Ami 2021) including in the *peraq api*. This flower symbolizes purity, sincerity and simplicity. Flowers of *P. alba* symbolize purity of heart and eternal love. Flowers of *C. odorata* is a symbol of beauty, fragrance and purity. The *E. milii* is a species in the family Euphorbiaceae. The flowers of this plant are used in the *peraq api* ritual because it is easy to find growing in the home environment and has flowers with attractive colors. The flowers of *B. spectabilis* mean affection while the flowers of *A. cathartica* symbolize happiness, the red flowers of *H. rosa-sinensis* mean courage and the flowers of *C. roseus* mean a balanced relationship with God and fellow humans. The *R. hybrida* with red flowers has a distinctive aroma that many people like and symbolizes love and affection. The *P. amaryllifolius* is also used in the *peraq api* ritual. The leaves of this plant are sliced into small pieces and then mixed with various flowers mixed with water to bathe the baby. Zakaria et al. (2020) mention that *P. amaryllifolius* is a tropical aromatic plant species. The Sasak people use the leaves of this plant because they have a strong and gentle fragrance.

The *C. grandis* is one of the plant species of the Cucurbitaceae family and is used in the *peraq api* ritual. Like *C. grandis*, which easily spreads and always thrives everywhere, the Sasak people believe that no matter how far and how great a person is, there must be a basis from which to grow and develop. The *C. halicacabum* belongs to the Sapindaceae family and is used in various rituals (Chaithra and Thomas 2017; Ratnani et al. 2021). In *peraq api* ritual, its stems and leaves are used as a symbol so that the baby is always healthy and safe. The *F. benjamina* is a plant species used in the *peraq api* ritual. Putri and Bashri (2019) stated that *F. benjamina* is a plant with socio-cultural value because it is believed to be a place for spirits to reside, a place to put offerings, and various other ritual needs. Therefore, *F. benjamina* is considered sacred by various tribes in Indonesia making it an important species (Raihandhany and Zen 2022).

Oryza sativa is used in various rituals (Sutrisno et al. 2020; Ratnani et al. 2021; Wakhidah et al. 2022). In *peraq api* ritual, *O. sativa* is used to make the *moto seong* and wrapped using *H. tiliaceus*. This shows that the Sasak people have passed down environmentally friendly food packaging knowledge. *Bambusa vulgaris* is used in various rituals (Des et al. 2019; Sutrisno et al. 2020). In *peraq api* ritual, *B. vulgaris* is the material for making *kleong* (woven bamboo). The Sasak people use *kleong* to put their babies when doing *ta eyok* because *kleong* is strong and has pores so that the smoke from the extinguished charcoals can reach the baby's body. Meanwhile, using other materials, such as plastic, the smoke from the coals will not reach the baby's body.

During the *peraq api* ritual, the leaves of *P. betle* and the fruits of *A. catechu* and *K. galanga* are chewed by *belian* and then rubbed on the baby's forehead and chest. Seo et al. (2022) stated that *P. betle* is a cosmopolitan plant with edible leaves and several health benefits. Widowati et al. (2020) stated that locals use *P. betle* leaves for baby health. The leaves of *P. betle* have antibacterial, antifungal

(Nayaka et al. 2021), antioxidant, and anti-inflammatory properties (Seo et al. 2022).

The *C. longa* and *K. galanga* are species in the Zingiberaceae family that are used in various rituals (Des et al. 2019; Sutrisno et al. 2020; Ratnani et al. 2021; Wakhidah et al. 2022). The people of the Sasak Tribe use *C. longa* as *kejames* in *peraq api* ritual. The *C. longa* contains curcumin, which maintains hair growth and health (Jang et al. 2007). In *peraq api* ritual, rhizomes of *K. galanga*, leaves of *P. betle* and fruits of *A. catechu* are chewed by *belian* and then rubbed on the baby's forehead and chest. Kumar (2020) and Wang et al. (2021) stated that the rhizome of *K. galanga* has antibacterial, antioxidant, antitumor, anti-inflammatory and analgesic properties.

The part of the plant most used in the *peraq api* ritual is the flower, as shown in Figure 4. Flowers are used in various rituals (Asra et al. 2020; Darma et al. 2021; Christensen 2023; Han 2023). The flowers used in the *peraq api* ritual have various colors. This is a symbol so that the baby will grow into a good person with beautiful attitude like a flower, make the family name proud and become the family's pride.

Knowledge about the uses and conservation status plays an important role in plant conservation. Nurfadilah et al. (2017) stated conservation status refer to IUCN Red List of threatened species. Based on IUCN Red List (2023), the plants used in the *peraq api* ritual are divided into three categories, namely: Not Evaluated, Data Deficient, and Least Concern, as shown in Table 2 and Figure 5. There are six plants (27%) identified as Least Concern (LC), i.e., *C. odorata*, *C. halicacabum*, *E. milii*, *F. benjamina*, *H. tiliaceus* and *P. alba*. Traditional knowledge can be used as a means of conservation. *Peraq api* is a sacred ritual that uses various plant species. Because of the importance of the *peraq api* ritual, the Sasak people cultivate these various species so that they are easy to obtain so that the ritual can be carried out well. Cultivation of various plant species in various habitats is a conservation effort that has been passed down from generation to generation among the Sasak people.

Habitat of plants used in *peraq api* ritual

Plants used in the *peraq api* ritual can be found in various habitats, including homegarden, garden, riverside, and rice field. These various habitats represent indigenous ecological and ethnobotanical knowledge in land management which can be considered as cultural landscape. Using such knowledges in land management has a very positive role in sustainable environment and socio-cultural preservation. These plants mostly grow in the homegarden, as shown in Figure 6, except for *O. sativa* which is cultivated in the rice field. This shows that the Sasak people plant useful plant species in their homegarden to make them easily accessible. This has a positive effect in the form of a homegarden consisting of many plant species. Therefore, the homegarden of the Sasak people on Lombok Island has high biodiversity. Knowledge about the use of plants in the *peraq api* ritual, including environmental management as a plant habitat, must be passed on to the younger generation of the Sasak people in Lombok Island.

This follows the statement of Yudiyanto et al. (2022) that local knowledge is passed down from generation to generation.

Homegarden is part of an interesting cultural landscape in the tropics since this landscape contains highly diverse species of plants to fulfill the needs of the owner and is influenced by physical environment and socio-cultural aspects (Rahu et al. 2013; Solossa et al. 2013; Zimmerer 2014). One of Indonesia's traditional agroforestry systems is homegarden, where various annual and perennial plants are grown. It has served ecological, cultural, economic, and social purposes (Suwartapradja et al. 2023). Homegarden is rich in plant species due to the awareness on the importance of conserving environment, appreciation of the environment, and appreciation for plants. From the perspective of ecology, the variety of plant species in the homegarden indicates that the current system is stable and resistant to disease and pests. Additionally, litter layers produced in the homegarden can prevent surface soil erosion. Generally, the variety of plant species found in homegardens varies based on the climate. The local climate greatly influences the physiology and adaptation of plant species that can grow in homegarden. The huge number of plant species in the homegarden makes it as a natural gene bank (Hakim 2014). Home garden conservation supports the SDGs achievements, including Goal 15, namely: life on land, especially sustainable management, and biodiversity (Rooduijn et al. 2018; Dominguez-Hernandez et al. 2022; Hong and Zimmerer 2022; Kassa et al. 2023).

The potentials of *peraq api* ritual for tourism attraction

The *peraq api* ritual, including the ethnobotanical knowledge related to it, has the potential to be developed as sustainable cultural tourism. According to Hong et al. (2018) and Izzah et al. (2021), community ritual activities can become tourism attractions. For example, how plants are used in the *peraq api* ritual by the Sasak Tribe can be presented in an attractive manner. Promotional activities must be intensified so that the potential for ethnobotanical tourism based on the *peraq api* ritual can be developed and has positive benefits for science, tourism industry and the welfare of people in villages around Mandalika, Lombok Island.

Biryukov et al. (2023) mention that an interesting concept has an important competitiveness. In the context of tourism development based on ritual, ethnobotanical tour packages that can be developed include visiting ethnobotanical landscapes (homegarden, garden, ricefield, and riverside), practicing preparing plants to be used in the *peraq api* ritual, and planting and caring for these plants.

Cultural tourism is a type of tourism carried out by organizations or groups of people, with the primary goal being the satisfaction of an interest in and increased knowledge of the culture, history and legacy of the location of choice (Boulhila et al. 2022). Cultural tourism focuses on the tourist experience in a building and the daily life of people in tourist destinations (Stylianou-Lambert 2011), including experience in sacred rituals that are part of the local community's traditions (Yang 2011). Elfiondri et al. (2021) stated that tradition is an important element in the

development of cultural tourism. Tourists can enjoy culture through local attractions and events (Richards 2018). Several things, including culture, influence the tourist experience. The authenticity of experience felt by tourists is their involvement with cultural elements when tourists visit a cultural tourism destination (Prentice 2001). The unforgettable authentic experiences are created by deep involvement in local culture (Tung and Ritchie 2011).

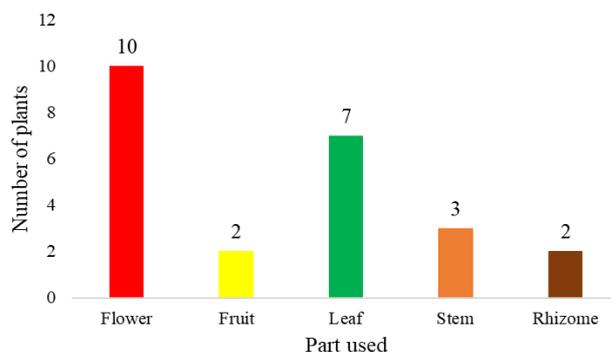


Figure 4. Number of plant species based on plant part used in *peraq api* ritual by Sasak community in Lombok Island, Indonesia

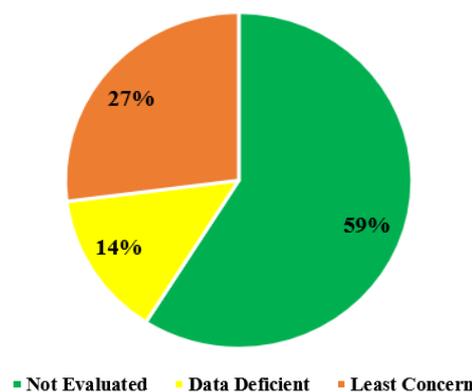


Figure 5. Number of plant species used on *peraq api* ritual based on conservation status

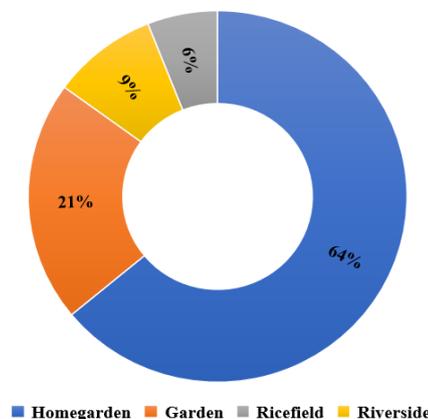


Figure 6. Number of plant species used on *Peraq api* ritual based on habitat

Tourists can have the experience of participating in the *peraq api* ritual carried out by the Sasak people in Lombok Island. Elfiondri et al. (2021) stated that in the context of a tourist site, the experience of participating in ritual activities can provide tourists satisfaction. This contributes to shaping tourist intentions to revisit. Andrade et al. (2021) stated that sustainable tourism and responsible management of cultural tourism can function to protect the authenticity or meaning of cultural products for local communities as hosts as well as for tourists. The development of cultural tourism always leads to economic growth in each region (Jurenienė and Radcevičius 2022). Cultural tourism is a vital economic growth and community development source for many nations and regions, especially developing countries (Liu and Shu 2020), such as in the villages around Mandalika, Lombok Island, Indonesia.

Cultural tourism is part of sustainable tourism because sustainable tourism includes sustainable society, economy, environment and culture (Pan et al. 2018). Therefore, the development of *peraq api* ritual as sustainable cultural tourism can play an important role in preserving regional cultural values as a national cultural asset, preserving plant diversity and environment, and improving the welfare of local communities.

There must be a tourism development strategy in today's highly competitive tourism business (Stepanova et al. 2023). Several strategies are proposed for developing sustainable tourism based on *peraq api* ritual in Lombok Island, namely: (i) ensuring that all stakeholders have the same understanding and appreciation for promoting sustainable tourism based on ritual; (ii) ensure that development (related to tourism, infrastructure, housing, etc.) supports and strengthens the authenticity of the cultural landscape; (iii) minimize negative environmental impacts, enforce land use policies, and strengthen site management and monitoring through collaborative and participatory efforts; (iv) empowering local communities to be directly involved in sustainable tourism to improve their welfare; and (v) promote the development of sustainable tourism products and services that respect local cultural values, protect landscapes, and conserve biodiversity.

In conclusion, it was found that 15 families, 21 genera, and 22 plant species are used in *peraq api* ritual. Each plant symbolizes the indigenous value and beliefs of Sasak Tribe related to their connection with God, people and environment. The use of plants in *peraq api* ritual also shows the indigenous intelligence of the Sasak Tribe. Traditional knowledge about the uses of plants and landscape management plays an important role in plant conservation. Plants used in the *peraq api* ritual can be found in various habitats, including homegarden, garden, riverside and rice field. These various habitats represent indigenous ecological and ethnobotanical knowledge of Sasak Tribe in landscape management. Therefore, such knowledges have a very positive role in conserving biodiversity, sustainable environment and socio-cultural preservation. The *peraq api* ritual has the potential to be developed as a sustainable tourism. It is crucial in preserving regional cultural values as a national cultural

asset, preserving the plant diversity and the environment, and improving the welfare of local communities.

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